

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Customer No.
KIM, Young-Woo	:	26817
	:	
Serial No. 10/577,170	:	Group Art Unit: 3739
	:	
Filed: December 13, 2006	:	Examiner: John P. LEUBECKER
	:	
Title: A LAPAROSCOPE WITH FLEXIBLE	:	Confirmation No. 1116
BINOCULAR CAMERA	:	
	:	
	:	x

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Commissioner for Patents
P.O. Box 1450
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AMENDMENT PURSUANT TO 37 C.F.R. § 1.116

Sir:

In response to the Final Office Action dated August 24, 2010 and the Advisory Action dated January 5, 2011 and January 13, 2011, please amend the above-identified application as follows:

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this Application:

1. (Currently amended) A stereoscopic laparoscope apparatus comprising a stereoscopic laparoscope, a computer adapted to convert and store stereoscopic image information of the patient's affected part inputted via the stereoscopic laparoscope, a supporting unit including a manipulator provided in a body of the stereoscopic laparoscope electrically connected to the computer, and a monitor used to output the stereoscopic image information converted by the computer,

the stereoscopic laparoscope comprising:

the supporting unit including a binocular assembly providing stereoscopic vision having a pair of parallel left and right supporting rods located at one side of the manipulator and having a predetermined length and diameter; and

a flexible tube unit including a pair of left and right cameras installed at the tip end of the left and right supporting rods, said flexible tube unit including a pair of left and right flexible tubes connected to said respective left and right supporting rods, said left and right flexible tubes ~~being driven to be driven apart and adjustable within a predetermined angle range via under operation of an actuator according to electric signals generated from the manipulator, wherein said left and right cameras flexible tubes are automatically adjusted so that they are spaced to~~ space said left and right binocular cameras apart from each other by a predetermined distance under operation of the actuator to enable the left and right binocular cameras providing stereoscopic vision to take stereoscopic images from all direction-different distances during laparoscopic surgery, wherein image information taken by the left and right cameras of the binocular camera assembly is stored in the computer and is converted into stereoscopic images to be displayed on the monitor for providing three-dimensional images for providing a stereoscopic vision.

2. (Canceled).

REMARKS

The Final Office Action dated August 24, 2010 and the Advisory Action dated January 5, 2011 and January 13, 2011 have been carefully considered. Claim 1 has been amended. Claim 1 is in this application.

Support for the amendment to claim 1 are found throughout the specification and in particular on page 1, lines 5-9 and page 8, lines 16-21. No new matter has been entered.

The previously presented claim was rejected under 35 U.S.C. § 103 as obvious in view of U.S. Patent No. 5,368,015 to Wilk. Applicant submits that the teaching of this reference does not teach or suggest the invention defined by the present claim.

In the Advisory action, the Examiner indicated that Applicant failed to provide evidence that Wilk teaches manual manipulation for driving the tubes apart. Applicant respectfully disagrees. As described in the previously submitted Amendment Wilk teaches manual manipulation of a bifurcated rigid support member in which prongs at each end are adjusted by a spring actuator after extending from a trocar sleeve or a tension cable. In particular, Wilk teaches at col. 11, line 1:

During insertion of rigid member 330 through trocar sleeve 342, which is depicted in FIG. 10A, prongs 332a and 332b are maintained in a parallel configuration in juxtaposition to one another by the trocar sleeve. Upon emergence of the prongs 332a and 332b from the distal end of trocar sleeve 342, the prongs are spread from the parallel insertion configuration to a separated use configuration shown in FIG. 10B.

The spreading of prongs 332a and 332b may be accomplished automatically by internal forces. To that end, prongs 332a and 332b are provided with respective actuation springs 346a and 346b which are biased to assume the configurations depicted in FIG. 10B. It is to be noted that the distance d1 (FIGS. 1 and 2B) between the distal tips of prongs 332a and 332b can be decreased from a maximum (FIG. 10B) by drawing member 330 in a proximal direction relative to trocar sleeve 342 so that the prongs are forced partially together by a camming action at a distal edge 348 of sleeve 342.

Prongs 332a and 332b perform the function of spacer member 324 illustrated schematically in FIG. 9. The spreading of prongs 332a and 332b upon an ejection thereof from trocar sleeve 342 may be implemented by an active actuator such as a tension cable assembly conventionally used in flexible endoscopes. Such an actuator assembly is considered equivalent to the inherent action of springs 346a and 346b."

It is clear that the tubes in Wilk are driven apart by actuation springs released when the trocar sleeve is moved away from the prongs or forced together by a camming action when the trocar sleeve is moved toward the prongs. Accordingly, contrary to the Examiners assertion Wilk does disclose a manually controllable element within the robotic system.

The claims have been amended to positively recite a stereoscopic laparoscope including a binocular camera assembly and a computer to convert and store stereoscopic image information for providing a stereoscopic vision. In contrast Wilk teaches at col. 2, lines 25-35:

The stereoscopic visual information may be provided at the remote location by generating a single video image having staggered image components of different colors, filters over different eyes of a viewer serving to select between the staggered image components. Alternatively, the stereoscopic visual information may be provided at the remote location by providing two video monitors attached to one another for mounting to a person's head and, generating on the monitors, two video images having staggered or parallax-shifted image components.

In the present invention, the stereoscopic image is produced by each of the binocular cameras which provide stereoscopic vision. In the present invention, the distance is adjusted between the lenses of the cameras similar to convergence control of human eyes. There is no teaching or suggestion of this feature in Wilk. As described at page 6, lines 10-20 of the present application, the present invention has the advantageous effect of realizing stereoscopic vision similar to that of a human.

In the present invention, the left and right flexible tubes are automatically driven apart and adjustable within a predetermined angle range via an actuator according to electric signals generated from a manipulator to provide stereoscopic vision of a relatively wide area of the affected part rapidly and accurately. In contrast, Wilk teaches manual manipulation of a bifurcated rigid support member in which prongs at each end are adjusted by a spring actuator after extending from a trocar sleeve or a tension cable. As shown in Fig. 11 of Wilk, the actuator does not connect to sleeves 332a and 332b and Wilk does not teach or suggest actuation of the sleeves by the actuator of the robotic system. Moreover, Wilk does not teach a binocular camera assembly and automatic adjustment of the spacing between left and right cameras to allow the cameras to be automatically adjusted to take stereoscopic images from all distances during

laparoscopic surgery for providing three dimensional images. Accordingly, the present invention is not obvious in view of Wilk.

In view of the foregoing, Applicant submits that all pending claims are in condition for allowance and request that all claims be allowed. The Examiner is invited to contact the undersigned should he believe that this would expedite prosecution of this application. The Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 13-2165.

Respectfully submitted,



Dated: February 24, 2011

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